

## REMARKS

### STATUS OF CLAIMS

Claims 41-76 are pending. Claims 41-43 and 60 have been amended.

### 35 U.S.C. §112, SECOND PARAGRAPH REJECTIONS

Claims 41-76 were rejected under 35 U.S.C. §112, second paragraph as allegedly being indefinite.

Claim 41 (from which Claims 42-76 depend) stands rejected for using the phrase “using at least one organic compound monomer as a source to produce a plasma from which the plasma polymer is deposited”.

In response to Applicants’ arguments dated March 9, 2010, the Examiner stated:

Applicants have made arguments with respect to independent **claim 41**, which implied that the clarity problems therein are simply a matter of examiner’s own preferences, however employing illogical statements is not a mere matter of preference, as in styles of writing, but creates a lack of clarity with respect to what process is actually being performed. As previously discussed claiming “using...organic compound monomer as a source to produce a plasma...” has such logic problems as it literally says that the monomer is the source that produces the plasma. Aside from literally requiring the monomer to actually produce the plasma, as opposed to typical energy sources such as RF, DC, microwave; if the reader makes unclaimed assumptions that the monomer was actually used as a source material from which the plasma was made (instead of what is actually claimed), given the current phrasing one has to decide whether or not assumption means that the claims must require that the monomer employed be capable of sustaining the plasma without the use of any plasma gas, since it is the ‘source’ used to produce the plasma. In other words, if [sic] applicant actually intending to claim as their arguments are ambiguously implying that any monomer employed must be a plasma gas, capable of sustaining a plasma? Applicants’ resistance to amending their claims so that they actually make scientific sense with **clarifying language**, such as – using at least one organic monomer as a deposition source when producing a plasma from which the plasma polymer is deposited --, or whatever relationship they actually intend/meaning [sic], is not understood by the examiner.

(Office Action, at page 2) (emphasis in original).

Applicants respectfully traverse. Applicants respectfully submit that one of skill in the art would fully appreciate the definiteness of the term based on a reading of the specification. According to MPEP §2173.02, "If the disclosure and claims are sufficient for one skilled in the art to understand, an examiner 'should not reject claims or insist on their own preferences if other modes of expression selected by applicants satisfy the statutory requirements'." Also, "It is not necessary that the application describe the claim limitations exactly, but only so clearly that persons of ordinary skill in the art would recognize from the disclosure that applicant's invention included those limitations." (See MPEP §2173.02 ad In re Smythe, 480 F.2d 1376, 178 USPQ 179 (CCPA 1973).)

The Examiner maintained her allegation that:

...to the best at [sic] the examiner's knowledge, it is not possible to create a plasma using a monomer, one must input energy, such as RF energy to cause excitation **to produce a plasma**, hence it is unclear in independent **claim 41** how applicants are 'using at least one organic compound monomer as a source to produce a plasma', i.e. the source for generating the plasma = organic monomer, which is what is actually being claiming [sic]! Would applicants actually mean something more scientifically logical, such as -- using at least one organic compound monomer as a polymer source material when producing a plasma... --? In other words, while one may be using a gas or vapor when producing a plasma, a gas or vapor does not itself produce the plasma!

(Office Action, at page 3) (emphasis in original).

As explicitly described in the specification, as originally filed, the organic compound utilized in a plasma polymerization technique is often referred to as a "monomer". The deposit is referred to as a "plasma polymer". (See Specification, page 4, lines 9-15). Accordingly, one of skill in the art would appreciate that the monomer is the "source" of the plasma polymer deposit.

Furthermore, the relevant step of claim 41 reads “depositing a plasma polymer on the substrate using at least one organic compound monomer”. The step refers to depositing a plasma polymer using at least one organic compound monomer. One skilled in the art understands what it means to deposit a plasma polymer. Claim 41 specifies that the plasma polymer is to be deposited with using at least one organic compound monomer. One skilled in the art understands this notion.

It is also noted that claim 41 has been amended to indicate that at least one of “the plasma source” and “the substrate” are moved.

The Examiner has also commented on the wording of claims 57-60. In particular, the Examiner alleged that these claims create ambiguities, potential inconsistencies with the “consists essentially of” requirement and including “options which read on limitations broader than previously required limitations”. Applicants respectfully traverse these statements and request further clarification.

Claim 56 includes the transitional phrase “consists essentially”. According to MPEP 2111.03, “consists essentially” merely limits the scope of a claim to the specified materials or steps. It also includes materials or steps which do not materially affect the basic and novel characteristics of the claim. (See MPEP §2111.03).

Claim 57, which is dependent upon claim 56, includes the transitional phrase “consists of”. According to MPEP §2111.03, “consists of” is a transitional statement that excludes any element, step or ingredient not specified. Accordingly, one of skill in the art would require claim 57 to include only “tetraethyleneglycol monoallyl ether”. Also, one of skill in the art would appreciate that tetraethyleneglycol monoallyl ether is an ethenically unsaturated organic compound, thus making claim 57 properly dependent upon claim 56.

Claim 58 requires that the organic monomer be an alkene, carboxylic acid, alcohol or amine. One of skill in the art would appreciate that the alkene, carboxylic acid, alcohol or amine must be an ethylenically unsaturated organic compound, as claim 58 is dependent upon claim 56 and thus Applicants respectfully submit that claim 58 is not an improper dependent claim.

Claim 59 requires that the plasma polymer deposit consist of a mixture of two or more ethylenically unsaturated organic compounds. Claim 60, which depends upon claim 59, requires that the organic compound be an alkene, a carboxylic acid, an alcohol or an amine. Claim 60 has been amended to require that the mixture of two or more ethylenically unsaturated organic compounds include an alkene, a carboxylic acid, an alcohol or an amine.

In view thereof, Applicants respectfully submit that the claims, as amended, are in accord with 35 U.S.C. §112, second paragraph.

### **35 U.S.C. §112, FIRST PARAGRAPH REJECTIONS**

Claims 41-76 were rejected under 35 U.S.C. §112, first paragraph as allegedly failing to comply with the written description requirement.

The Examiner alleged the following, "...the claims as originally filed appear to make absolutely no mention of use of a mask or mask plate, and citing the entire specification is next to useless for clear indication of support." The Examiner then states various places in the specification where support for the amendments can be found, but then states that the phrase "at least one aperture" is new matter and that "the way in which the mask plate is claimed to be employed is broader in scope than the original disclosure" and "clearly *encompass new matter*". (Office Action, at page 7) (emphasis in original).

In response, reference is made to page 16, lines 17-19 of Applicants' original specification. As stated therein, a "mask" of multiple "holes" was attached to the mask plate. This, *inter alia*, provides support for at least one aperture.

With respect to Applicants' original specification, page 15, line 26 – page 16, line 2 discuss locating the mask plate to be close to the sample "but without touching", i.e., spaced from the substrate. Also, the mask plate separates the plasma source from the substrate as set forth in claim 41.

In view of the foregoing, Applicants respectfully submit that the claims, as amended, are in accord with 35 U.S.C. §112, first paragraph.

**Applicants' Response to Rejection over Dai and Gengenbach**

Claims 41-42, (43), 44, 47, 50, 63, and 67-76 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over "Surface Modification by Plasma Etching and Plasma Patterning" by Dai et al. (hereinafter "Dai"), who allegedly teach plasma polymerization techniques according to "A Multi-Technique Study of the Spontaneous Oxidation of n-Hexane Plasma Polymers" by Gengenbach et al. (hereinafter "Gengenbach") in view of U.S. Patent Publication No. 2004/0169004 to Kanbe et al. (hereinafter "Kanbe") and/or U.S. Patent Publication No. 2002/0014415 to Nakayama et al. (hereinafter "Nakayama").

The Examiner alleged that Dai teaches "plasma patterning employing a mask via plasma polymerization (or alternatively via plasma etching), so as to only deposit plasma polymers on surfaces exposed by apertures in the mask." (Office Action, at page 12) (emphasis in original). The Examiner relied on Gengenbach to incorporate various plasma polymerization techniques in support of the rejection.

Claim 41 was previously amended to define the mask plate as "being spaced from the substrate". The plasma source and/or the substrate are moved relative to one another to provide a non-uniform surface with the mask plate separating the two. The claim also requires at least one aperture that defines the features of the deposited plasma polymer surface. Nowhere in the combination of references is such a method disclosed or suggested.

Dai is directed to a surface modification procedure that incorporates "plasma etching" or "plasma polymerization". As discussed on pages 11-12 of the subject specification, Dai is directed to a "stencil" approach and it is the morphology of the substrate that affects the resolution of the plasma pattern. Dai utilizes "mask structures" or grids to form a patterned fashion on the substrate.

The procedure outlined in Dai is entirely different from that of the present invention and cannot provide the same type of non-uniform surfaces as the "writing" approach, which is presently claimed. In the writing approach, the mask plate is spaced apart from the substrate. The mask plate includes at least one aperture to define the features of the plasma polymer. This allows both the plasma source and substrate to be moved relative to each other and to be moved relative to the mask plate. Since they can move relative to each other, the at least one aperture is able to define the features of the plasma polymer deposit on the substrate in such a way as to provide a non-uniform surface on the substrate. As Dai requires "masks" or stencils that are in direct contact with the surface, the surface and plasma source cannot be moved relative to one another. Accordingly, the stencil approach which is the central purpose of Dai is completely different from the "writing" approach distinguished by the instant specification.

Gengenbach was merely cited for various plasma polymerization techniques and fails to cure the deficiencies of Dai. The Examiner then cited Kanbe for allegedly teaching that a surface can be treated with a plasma through a mask. The Examiner pointed to specific paragraphs of Kanbe that disclose utilizing a mesh mask to obtain a patterned film (paragraph

[0024]), utilizing irradiation (paragraph [0122]), plasma polymerization to create affinity effects (paragraph [0166]) and surface modification via plasma irradiation (paragraphs [0182]-[0185]). The Examiner then alleged obviousness based on the following: "...given that plasma treatment for patterning analogous to those taught by Dai can be performed with masks on substrate as illustrated by Dai...to perform such plasma polymerization...given the implications and Kanbe et al. that plasma polymerization may be used to produce analogous plasma induced affinity effects." (Office Action, at page 11). Applicants respectfully traverse and request clarification.

Kanbe is directed to a substrate for forming a specific pattern. It is formed by causing a fluid to adhere to the substrate. The fluids are described as any medium with a viscosity that permits it to be discharged from a nozzle. The "mask" as described by Kanbe is essentially a stencil, similarly to that described in Dai. See specifically, Kanbe paragraph [0131]. The mask is applied to a base, then ultraviolet irradiation is applied to the top of the mask.

Furthermore, nowhere in Kanbe is it disclosed or suggested to move the substrate or plasma source. Furthermore, nowhere in Kanbe is it disclosed or suggested to utilize a mask plate as claimed.

Nakayama was cited, in the alternative, for providing patterned arrays that include using masks. Nakayama is a sensor fabricating method and involves electrode configurations. The Examiner referred to Nakayama's "second layer", which may be an insulating polymer that is applied via plasma polymerization. Nakayama teaches a mask that is "a solid film with an aperture through which the sensor material or one component of the sensor is deposited". The mask has multiple apertures so that the same material may be deposited in different spots. However, Nakayama does not teach a mask plate that is spaced from the substrate. Accordingly, the Nakayama mask can not achieve the same "uniting" effect as achievable with the claimed invention.

It is respectfully submitted that claim 41, and all claims that depend therefrom, are patentable over Dai, alone or in combination with Gengenbach, Kanbe and Nakayama.

**Applicants' Response to Rejection under §103(a) over Dai, Gengenbach, Kanbe, Nakayama and Morra**

Claims 51, 54-55, 61 and 76 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Dai, in view of Gengenbach, Kanbe and/or Nakayama and further in view of U.S. Patent No. 5,514,424 to Morra et al. (hereinafter "Morra").

The Examiner acknowledged that Dai fails to disclose specific categories of monomers, but alleged that Morra discloses "plasma polymer deposition employing fluorocarbon monomers." (Office Action, at page 17).

As stated in detail above, Dai, Gengenbach, Kanbe and Nakayama fail to disclose all the features of claim 41, and all that depend therefrom. Morra is directed to a process for reducing the friction coefficient between water and surfaces of polymeric materials. The process involves applying a thin layer of fluorinated polymer. The fluorinated polymer is applied by plasma-reduced polymerization. (See, e.g., col. 2, ll. 39-43.) Variations of the deposited polymer may be achieved by varying the plasma parameters. (See, e.g., col. 3, ll. 60-64). Morra does not disclose or suggest the use of a mask plate with at least one aperture to deposit a plasma polymer by utilizing a "writing" approach, as presently claimed. Rather, Morra relies on variation of the plasma process to obtain changes in the deposited polymer.

As stated above, claim 41 is directed to a method for depositing a plasma polymer onto a substrate by utilizing a "mask plate" and "at least one aperture". As set forth in Applicants' specification, the mask plate is set apart from the substrate and the at least one aperture is used to define features of the deposited plasma, such as the formation of dots or tracks. It is respectfully submitted that claims 51, 54-55, 61 and 76 are patentable over Dai, alone or in combination with Gengenbach, Kanbe, Nakayama and Morra.



**Applicants' Response to Rejection under §103(a) over Dai, Gengenbach, Kanbe, Nakayama and Renner**

Claims 45-46, 53-55, 61, 64-65 and 70 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Dai, in view of Gengenbach, Kanbe and/or Nakayama and further in view of DD 94657 to Renner et al. (hereinafter "Renner").

As stated in detail above, Dai, Gengenbach, Kanbe and Nakayama fail to disclose all the features of claim 41, and those that depend therefrom. Renner is directed to a protective coating that is plasma deposited onto a magnetic storage medium. At p. 2, second full paragraph, Renner describes the use of plasma polymerization. No use of a writing element or other intervening article is described.

As previously argued, Renner does not disclose or suggest the use of a mask plate or aperture to deposit a plasma. It is respectfully submitted that claim 41, along with dependent claims 45-46, 53-55, 61, 64-65 and 70, are patentable over Dai, alone or in combination with Gengenbach, Kanbe, Nakayama and Renner.

**Applicants' Response to Rejection under §103(a) over Dai, Gengenbach, Kanbe, Nakayama Badval and Timmons**

Claims 48, 50-52, 54-58 and 61 (62) were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Dai, according to Gengenbach, in view of Kanbe and/or Nakayama and further in view of U.S. Patent No. 6,358,569 to Badyal et al. (hereinafter "Badyal"), optionally considering U.S. Patent No. 6,306,506 to Timmons et al. (hereinafter "Timmons").

As stated in detail above, Dai, Gengenbach, Kanbe and Nakayama fail to disclose all the features of claim 41, and those that depend therefrom. Badyal is directed to a process for applying a film to a body. The process utilizes plasma polymerization. See, e.g., col. I, ll. 28-56. Badyal does not utilize a mask plate or at least one aperture for depositing a plasma polymer,

as set forth in claim 41. Timmons was alternatively cited for merely disclosing plasma processing techniques and allegedly relevant monomers. However, Timmons also fails to disclose use of a mask plate and aperture for defining features of the deposited plasma polymer. It is respectfully submitted that claim 41, along with dependent claims 48, 50-52, 54-58 and 61 (62), are patentable over Dai, alone or in combination with Gengenbach, Kanbe, Nakayama, Badyal and Timmons.

**Applicants' Response to Rejection under §103(a) over Dai, Gengenbach, Kanbe, Nakayama and Nomura**

Claims 45-46, 48-49, 51, 53-56, 58-61, (62) and 64-66 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Dai, according to Gengenbach, Kanbe and/or Nakayama and further in view of U.S. Patent No. 6,062,602 to Nomura (hereinafter "Nomura '602").

As stated in detail above, Dai, Gengenbach, Kanbe and Nakayama fail to disclose all the features of claim 41, and all that depend therefrom. Nomura is directed to a process of plasma modification of the lumen surface of tubing. As set forth in the Abstract of Nomura, a monomer vapor is entered into tubing which is excited to a plasma state to plasma modify the surface. As discussed above, claim 41 recites the use of a mask plate and at least one aperture to deposit a plasma polymer and thus obtain a non-uniform surface. Nomura has no such provision. It is respectfully submitted that claim 41, along with dependent claims 45-46, 48-49, 51, 53-56, 58-61, (62) and 64-66, are patentable over Dai, alone or in combination with Gengenbach, Kanbe, Nakayama and Nomura.

**Applicants' Response to Rejection under §103(a) over Dai, Gengenbach, Kanbe, Nakayama, Muguruma and Timmons**

Claims 48, 50-52, 54-58 and 61 (62) were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Dai, according to Gengenbach, Kanbe and/or Nakayama and further in view

of U.S. Patent No. 7,087,149 to Muguruma et al. (hereinafter "Muguruma"), optionally to Timmons.

As stated in detail above, Dai, Gengenbach, Kanbe and Nakayama fail to disclose all the features of claim 41, and those that depend therefrom. Muguruma was cited for its disclosure of various monomers and a plasma deposition technique. As set forth at col. 12, ll. 10-15, a pre-fabricated mask is used in Muguruma to form a pattern. As discussed at the second full paragraph of p. 6 of Applicants' specification, masks and stencils are known in the prior art. Muguruma, however, does not utilize a mask plate or the writing approach as set forth in claim 41. Timmons was alternatively cited for merely disclosing plasma processing techniques and allegedly relevant monomers. However, Timmons also fails to disclose use of a mask plate and at least one aperture for defining features of a monomer. Accordingly, any hypothetical combination of Dai, Gengenbach, Kanbe, Nakayama, Muguruma and Timmons fail to arrive at the present invention.

It is respectfully submitted that claim 41, along with dependent claims 48, 50-52, 54-58 and 61 (62), are patentable over Dai, alone or in combination with Gengenbach, Kanbe, Nakayama, Muguruma and Timmons.

**Applicants' Response to Rejection under §103(a) over Dai, Gengenbach, Kanbe, Nakayama and Nomura**

Claims 45-46, 48-49, 51, 54-56, 58-61, (62), 64-66 and 76 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Dai, according to Gengenbach and further in view of U.S. Patent No. 5,843,789 to Nomura et al. (hereinafter "Nomura '789").

As stated in detail above, Dai, Gengenbach, Kanbe and Nakayama fail to disclose all the features of claim 41, and those that depend therefrom. Nomura was cited for its disclosure of depositing plasma on a porous substrate. The Examiner alleges that the coating may be

classified as “non-uniform”. The plasma deposits of Nomura are described as “an ultrathin, contiguous, adherent layer”. Accordingly, one of skill in the art would appreciate that the plasma polymerization of Nomura ‘789 does not utilize a mask plate and at least one aperture for depositing plasma polymers, as presently claimed.

It is respectfully submitted that claim 41, along with dependent claims 45-46, 48-49, 51, 54-56, 58-61, (62) , 64-66 and 76, are patentable over Dai, alone or in combination with Gengenbach, Kanbe, Nakayama and Nomura ‘789.

**Applicants’ Response to Rejection under §103(a) over Dai, Gengenbach, Kanbe, Nakayama and Hu**

Claims 45-46, 49, 51, 53-56, 58-61, (62) , 64-66 and 76 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Dai, according to Gengenbach, in view of Kanbe and/or Nakayama and further in view of U.S. Patent No. 5,463,010 to Hu et al. (hereinafter “Hu”).

As stated in detail above, Dai, Gengenbach, Kanbe and Nakayama fail to disclose all the features of claim 41, and all that depend therefrom. Hu is directed to a hydrocyclosiloxane membrane prepared by plasma polymerization. The plasma polymerization process is described at col. 7, l. 31 – col. 9, l. 53. At col. 8, ll. 51-57, control of various plasma parameters is discussed as controlling the coating process.

As discussed above, claim 41 recites the use of at least one aperture for depositing the plasma polymer. Hu does not disclose or suggest the use of at least one aperture, as set forth in claim 41. It is respectfully submitted that claim 41, along with dependent claims 45-46, 49, 51, 53-56, 58-61, (62) , 64-66 and 76, are patentable over Dai, alone or in combination with Gengenbach, Kanbe, Nakayama and Hu.

**Applicants' Response to Rejection under §103(a) over Dai, Gengenbach, Kanbe, Nakayama Yoshimura and Timmons**

Claims 48, 52, 54-58 (and 62) were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Dai, according to Gengenbach, in view of Kanbe and/or Nakayama and further in view of "Guidelines for Preparation of Plasma-Polymer in View of Surface Functionalization of Solid Materials" to Yoshimura (hereinafter "Yoshimura"), optionally considering Timmons.

As stated in detail above, Dai, Gengenbach, Kanbe and Nakayama fail to disclose all the features of claim 41, and those that depend therefrom. Yoshimura was merely cited for disclosing the usefulness of certain compounds and plasma polymerization techniques. Yoshimura, however, does not utilize an aperture as set forth in claim 41. Timmons was again optionally cited for merely disclosing plasma processing techniques and allegedly relevant monomers. However, Timmons also fails to disclose use of a mask plate and at least one aperture for defining features of a monomer. Accordingly, none of the cited references overcome this major deficiency of Dai.

As discussed above, claim 41 recites the use of a mask plate and at least one aperture for depositing a plasma polymer. Yoshimura does not disclose or suggest the use of a mask plate or writing approach, as set forth in claim 41. It is respectfully submitted that claim 41, along with dependent claims 48, 52, 54-58 (and 62), are patentable over Dai, alone or in combination with Gengenbach, Kanbe, Nakayama and Yoshimura, optionally considering Timmons.

**Applicants' Response to Rejection under §103(a) over Behn**

Claims 41-43 and 68 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over U.S. Patent No. 4,508,049 to Behn et al. (hereinafter "Behn").

The Examiner acknowledged that Behn fails to disclose a gas employed for the polymerization process, but alleged that:

...however inherently must be a polymerizable gas, hence it would've been obvious to one of ordinary skill in the art, given the generic teaching of using a gas, i.e. a polymerizable gas, to use common & conventional forms of polymerizable gas, which would have been suggested & in place if of [sic] employing organic monomers in gaseous form, as monomers are generally the most readily vaporize able [sic] or found in vapor form reagents for polymerization.

(Office Action, at page 31).

Behn is directed to the production of a laminated capacitor for an electrical component. In particular, Behn describes electrical components that alternate between metal and polymer layers. The metal is deposited by vapor deposition and the polymer is applied via glow discharge. Nowhere in Behn is it disclosed or suggested to utilize a mask plate having an aperture to deposit a plasma polymer onto the surface. Furthermore, nowhere in Behn is it disclosed or suggested that the monomer source and substrate may be moved relative to one another.

It is respectfully submitted that claim 41, and all claims that depend therefrom, are patentable over Behn.

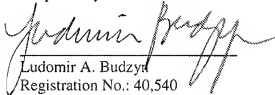
#### **DOUBLE PATENTING REJECTION**

Claims 41-76 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over Claims 85-122 of copending Application No. 10/560,210 in view of Dai, in view of Kanbe and/or Nakayama. Applicants request reconsideration of this rejection, particularly in view of the amendments made herein.

Applicants: Short et al.  
Application No.: 10/509,431  
Amendment and Response dated August 9, 2010  
Reply to Office Action dated June 9, 2010  
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Favorable action is earnestly solicited. If there are any questions or if additional information is required, the Examiner is respectfully requested to contact Applicants' attorney at the number listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Ludomir Budzyn', is written over a horizontal line.

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